UNIVERSITY of ABERTAY DUNDEE

RUPEE CAVE

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Introduction

Rupee Cave is a 2D game written in Java for Android. The game is inspired by classic touchscreen mobile games such as *Copter* and *Flappy Bird.* The author used a custom made 2D game engine that was developed specifically for this project.

The game start menu. From here the user can start a new game, configure the options or quit the application.

Rational

Since the introduction of smartphones on the mobile market, simple games and applications have proven to be a lucrative market.

By developing *Rupee Cave*, the author wished to demonstrate some of the potential of touchscreen mobile gaming and of Google's Android SDK.

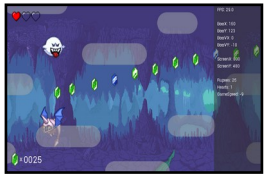
The idea was to showcase advanced game design concepts such as the use of "Actors" and "Scenes" to organize game content.

Design

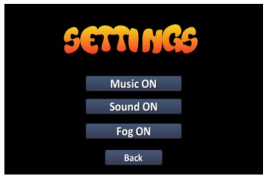
The game engine behind *Rupee Cave* uses advanced game design concepts and follows a strict MVC application model.

Key points of the design include:

- Controlled Frame Rate
- Multiple Game Scenes
- Animated Sprites
- Touchscreen Controls
- Parallax Animated Background
- Collision
- Full Game Cycle
- Collectible Items
- Sound and Music Engine



The main game scene, showing multiple animated sprites.



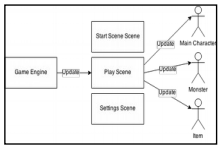
Game settings can be confirmed from a menu.

Implementation

The engine is responsible for loading and keeping track of game scenes and their associated gesture detectors as well as maintaining a constant FPS.

Each object in the game contains separate methods to update it's logic and to draw itself on the game canvas.

Diagram illustrating the game's update cycle. The draw cycle follows a similar pattern.



On each update cycle, the game engine calls the current scene's update method. Scenes are then responsible for calling updates on their elements, detecting collisions and handling additional game logic.

An animated monster. The game's sprite class loops through each frame to create an animated effect.

The game's sprites are animated using bitmap files containing the actors at different stages of their movement.

Testing

The game was thoroughly tested on a Samsung Galaxy SII with Android 4.1.6 and on the Android 5.0 emulator. It generally works as intended on both setups.

On rare occasions however, the application may crash on startup.

Due to limited access to hardware, the developer was unable to test the game on additional devices and screen settings.

Current Limitations

While complete, the game is currently unchallenging and dull.

With additional time, the game's variables could be tweaked to provide players with a more enjoyable and addictive experience.

The game engine will also be improved in the future to allow different games to be developed on it's core.

Additionally, it is important to note that currently all game media was taken from other games and products (full credits are given in the source).